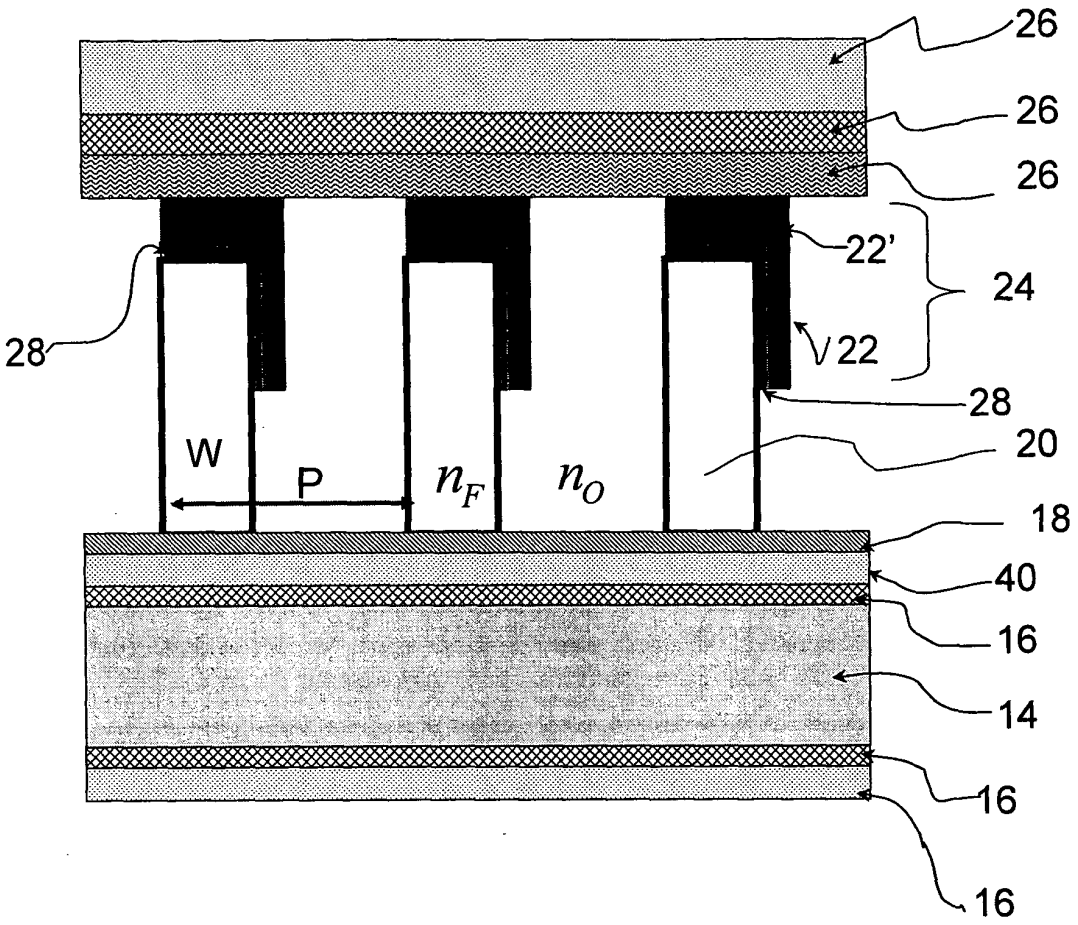

FIGURE 1.

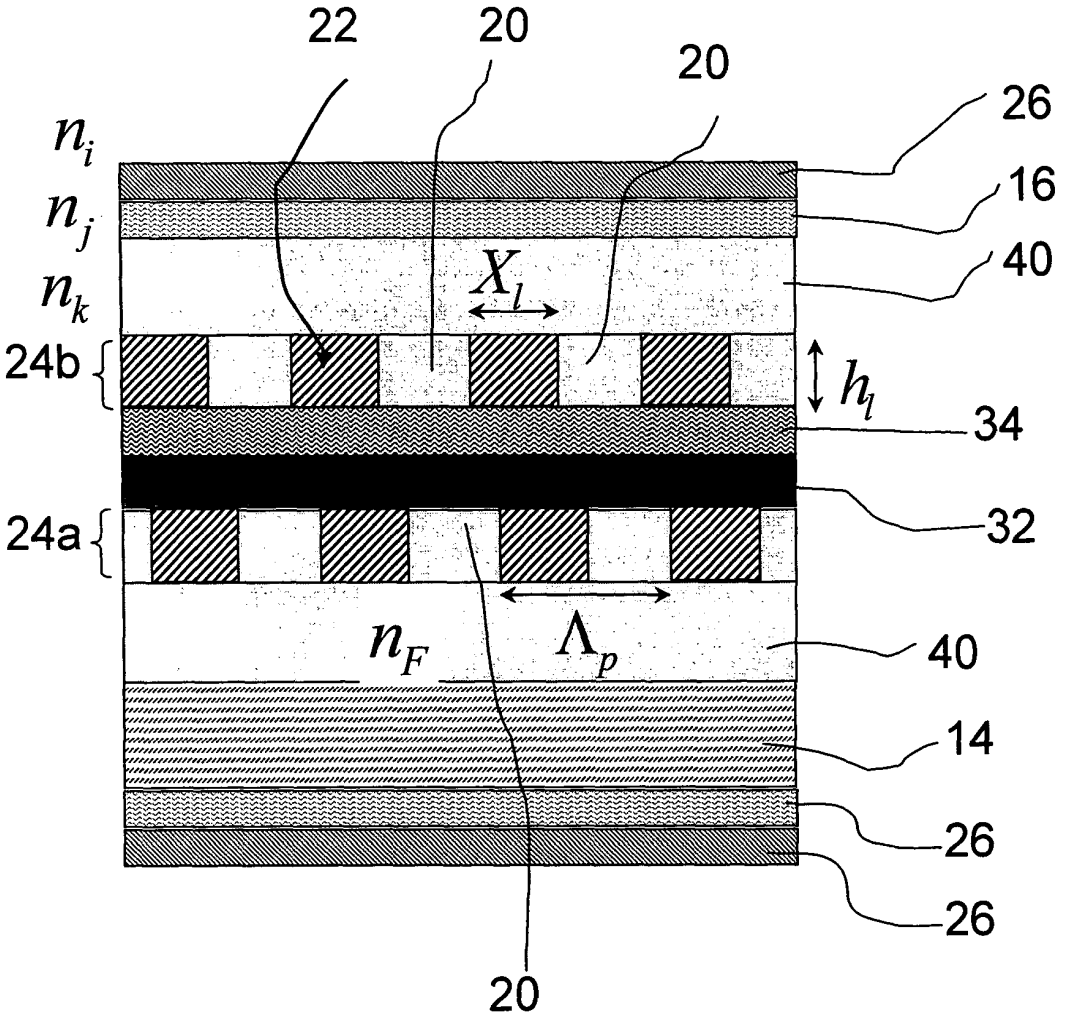
22
20
20
26
n_i
n_j
n_k
16
40
X_l
24b
h_l
34
32
24a
n_F
Λ_p
40
14
26
26
20

FIGURE 2.

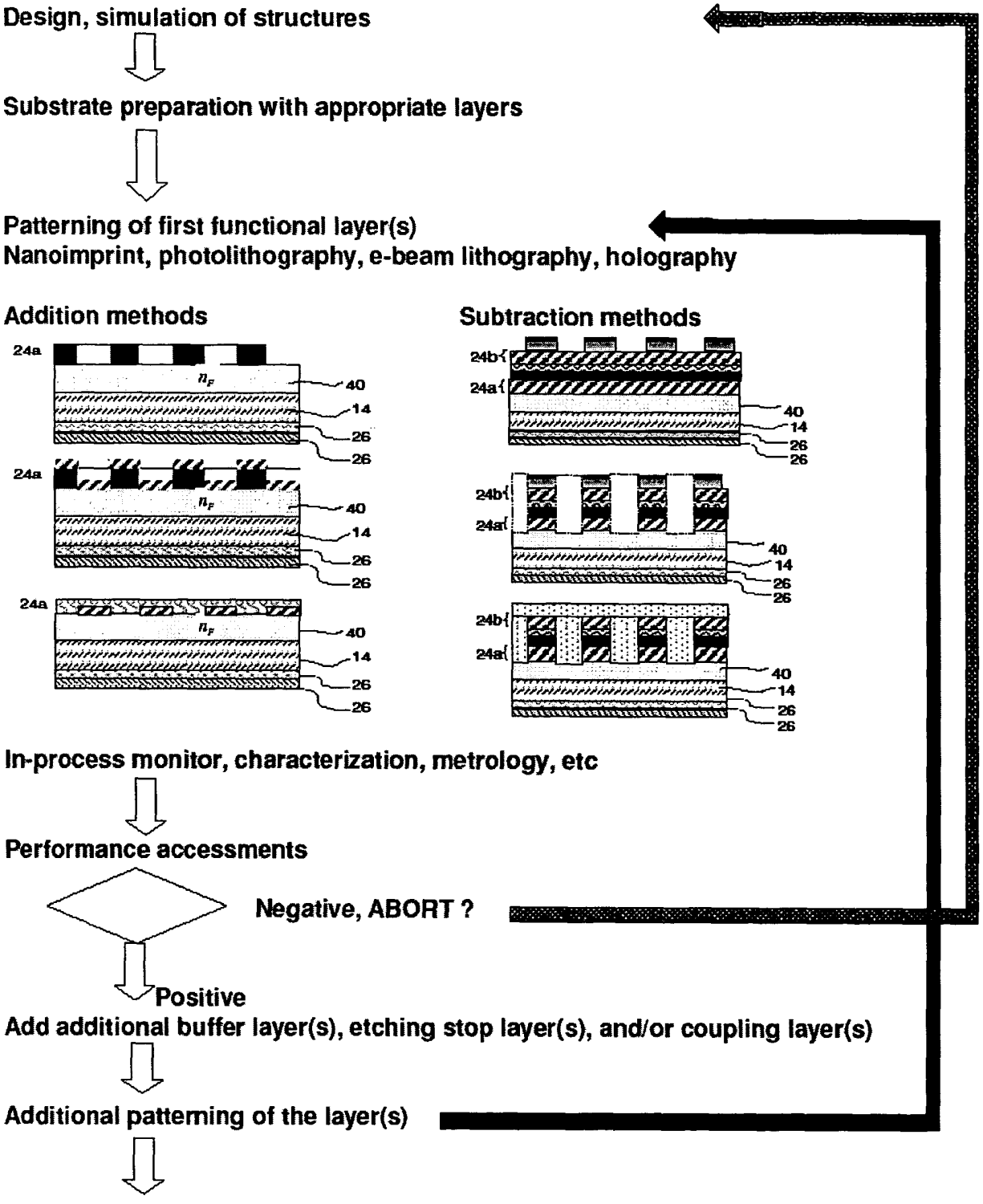
Design, simulation of structures
Substrate preparation with appropriate layers
Patterning of first functional layer(s)
Nanoimprint, photolithography, e-beam lithography, holography
Addition methods
Subtraction methods
24a
24b
n_F
40
14
26
In-process monitor, characterization, metrology, etc
Performance accessments
Negative, ABORT ?
Positive
Add additional buffer layer(s), etching stop layer(s), and/or coupling layer(s)
Additional patterning of the layer(s)

FIGURE 3.

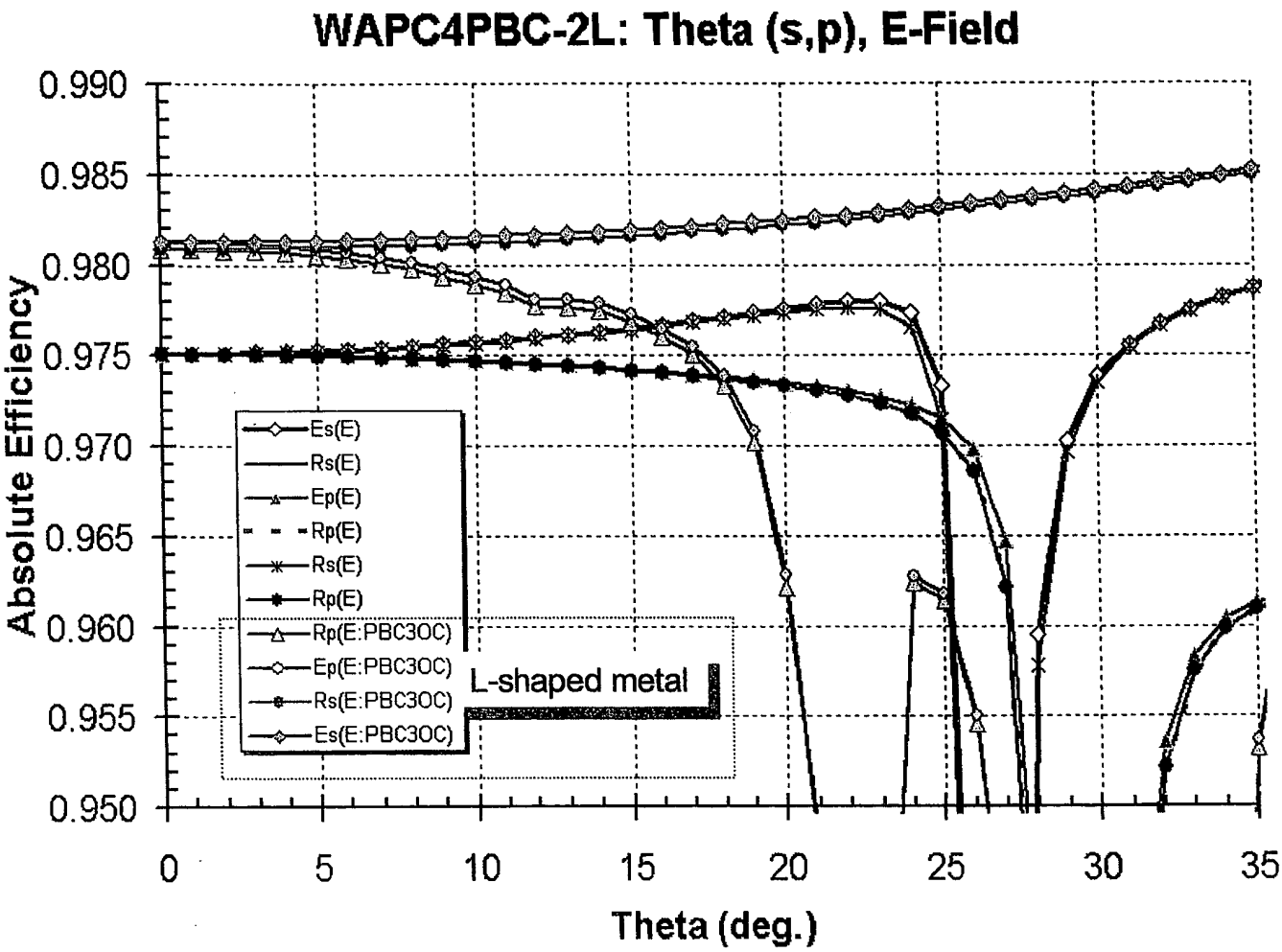
WAPC4PBC-2L: Theta (s,p), E-Field
Absolute Efficiency
0.990
0.985
0.980
0.975
0.970
0.965
0.960
0.955
0.950
0
5
10
15
20
25
30
35
Theta (deg.)
Es(E)
Rs(E)
Ep(E)
Rp(E)
Rs(E)
Rp(E)
Rp(E:PBC3OC)
Ep(E:PBC3OC)
Rs(E:PBC3OC)
Es(E:PBC3OC)
L-shaped metal

Figure 4

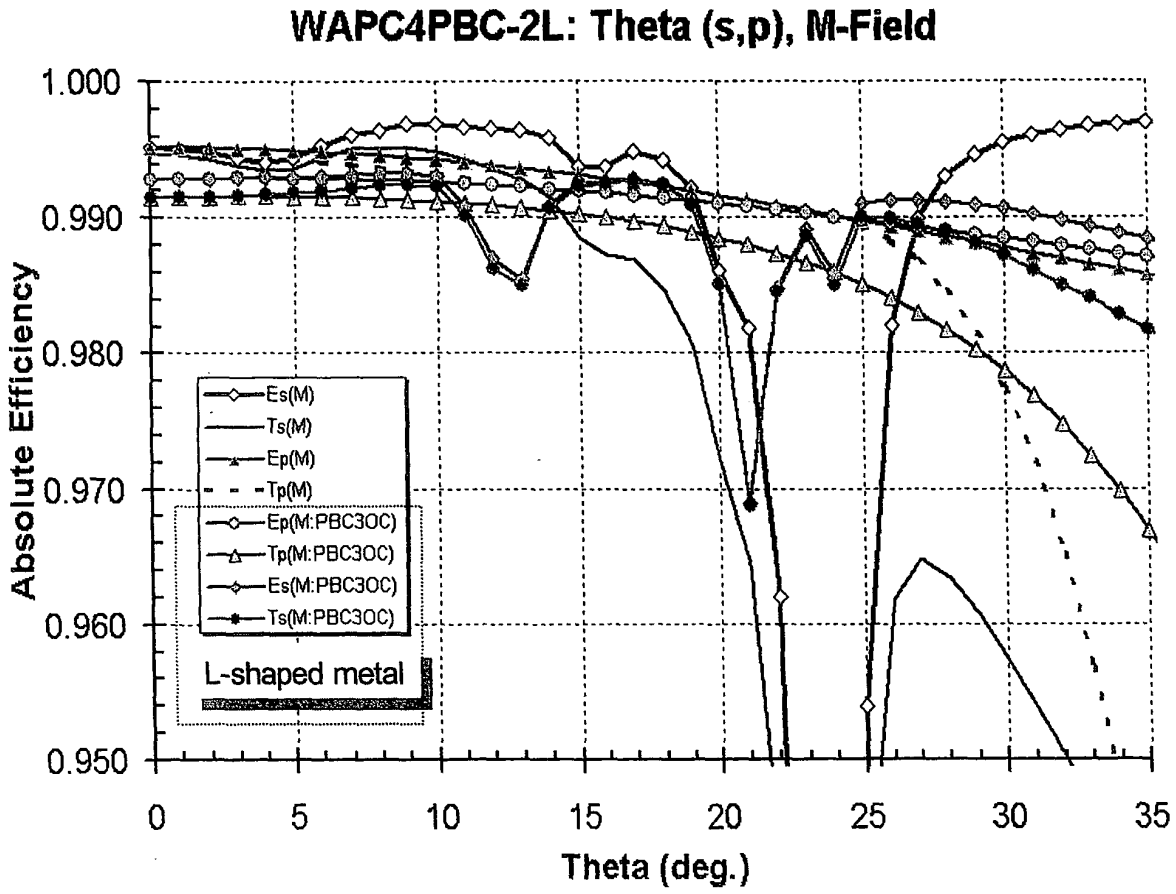
WAPC4PBC-2L: Theta (s,p), M-Field
Absolute Efficiency
1.000
0.990
0.980
0.970
0.960
0.950
0
5
10
15
20
25
30
35
Theta (deg.)
Es(M)
Ts(M)
Ep(M)
Tp(M)
Ep(M:PBC3OC)
Tp(M:PBC3OC)
Es(M:PBC3OC)
Ts(M:PBC3OC)
L-shaped metal

Figure 5

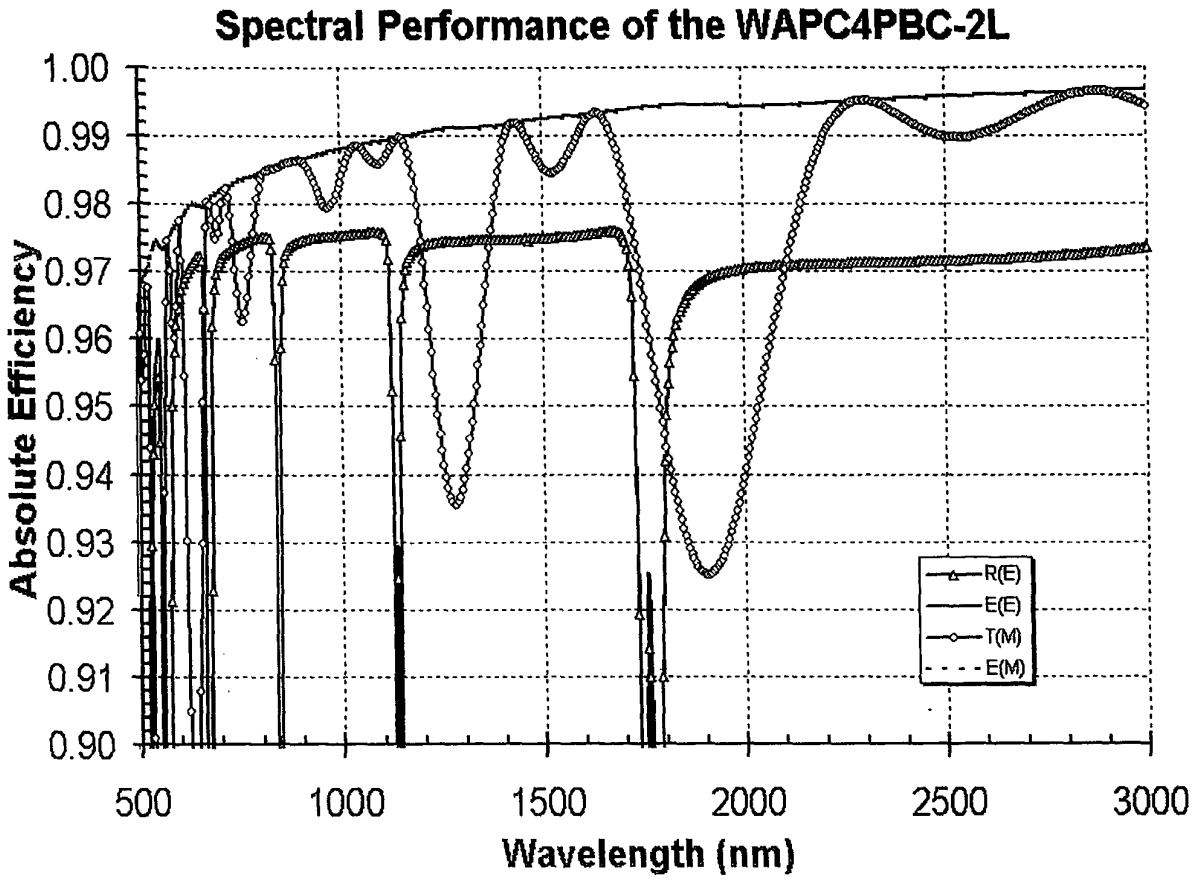
Spectral Performance of the WAPC4PBC-2L
Absolute Efficiency
1.00
0.99
0.98
0.97
0.96
0.95
0.94
0.93
0.92
0.91
0.90
500
1000
1500
2000
2500
3000
Wavelength (nm)
R(E)
E(E)
T(M)
E(M)

Figure 6

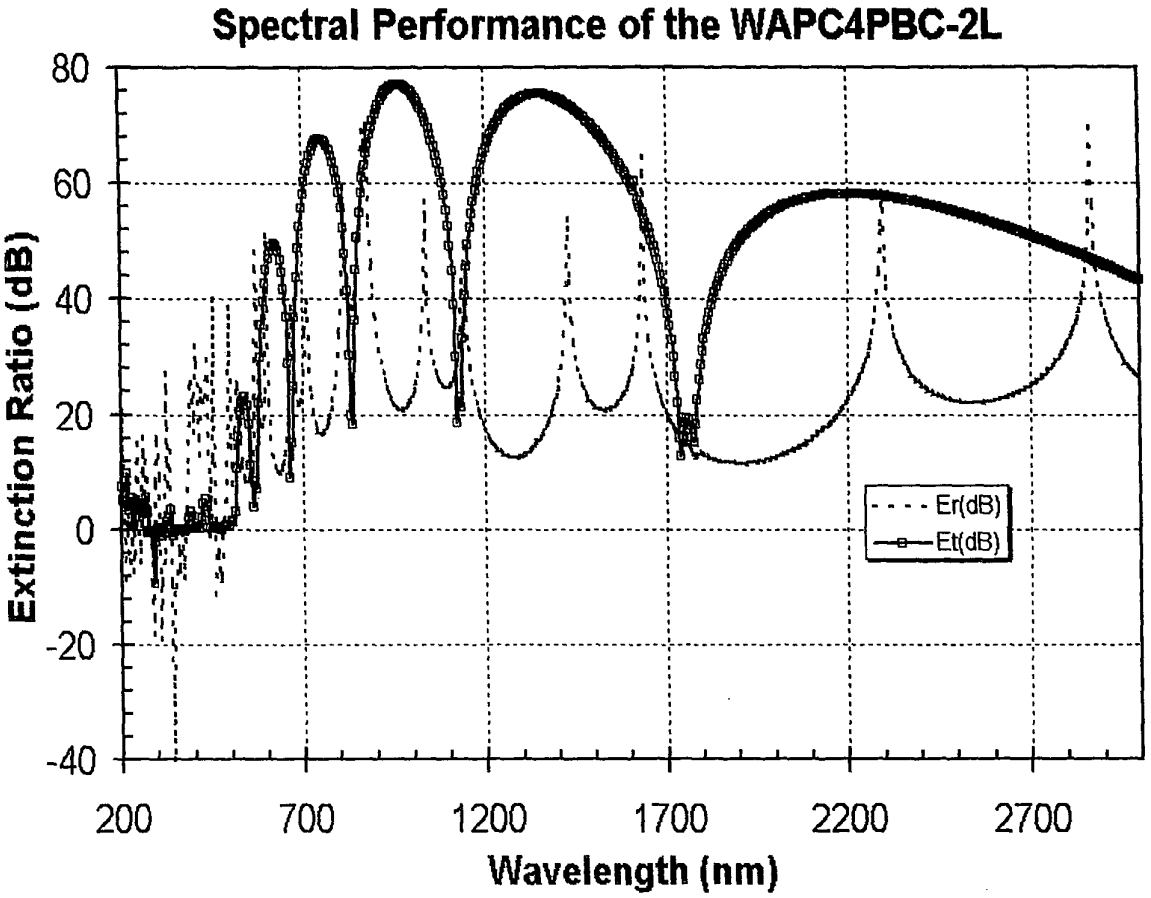
Spectral Performance of the WAPC4PBC-2L
Extinction Ratio (dB)
80
60
40
20
0
-20
-40
200
700
1200
1700
2200
2700
Wavelength (nm)
Er(dB)
Et(dB)

Figure 7

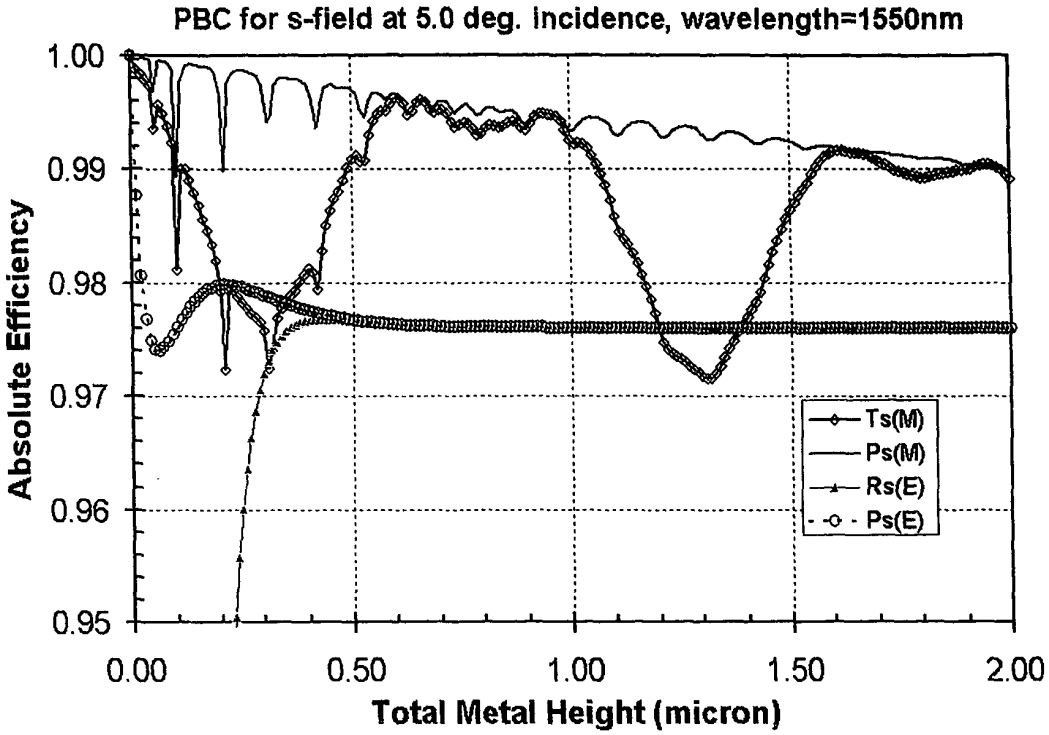

Figure 8A

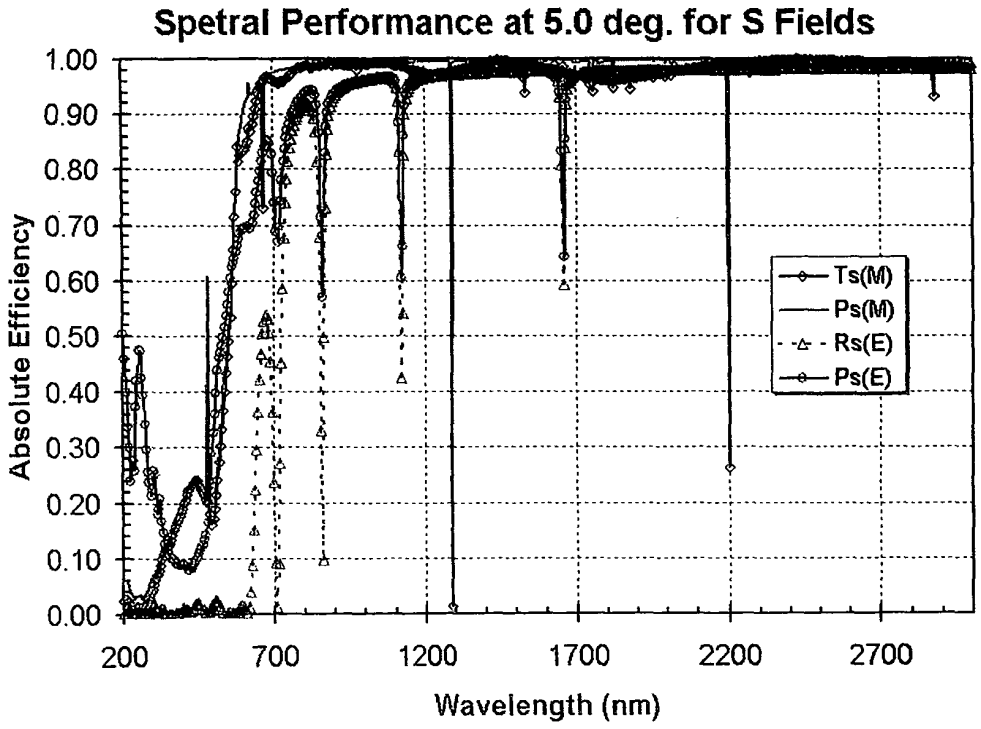

Figure 8B

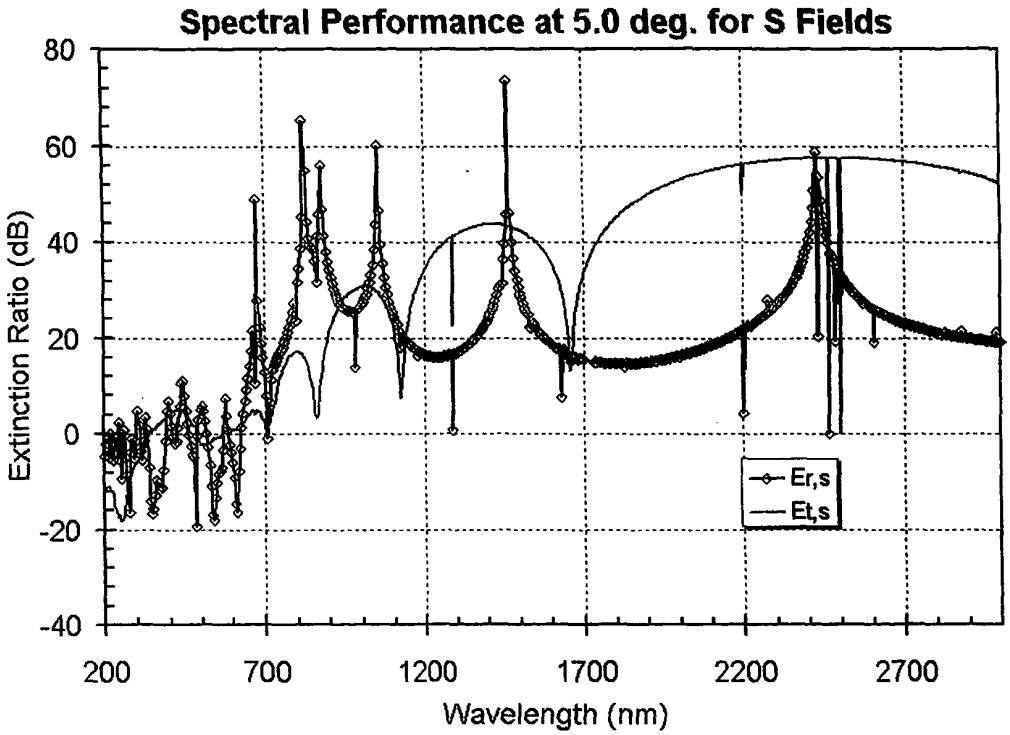
Spectral Performance at 5.0 deg. for S Fields
Extinction Ratio (dB)
80
60
40
20
0
-20
-40
200
700
1200
1700
2200
2700
Wavelength (nm)
Er,s
Et,s

Figure 8C

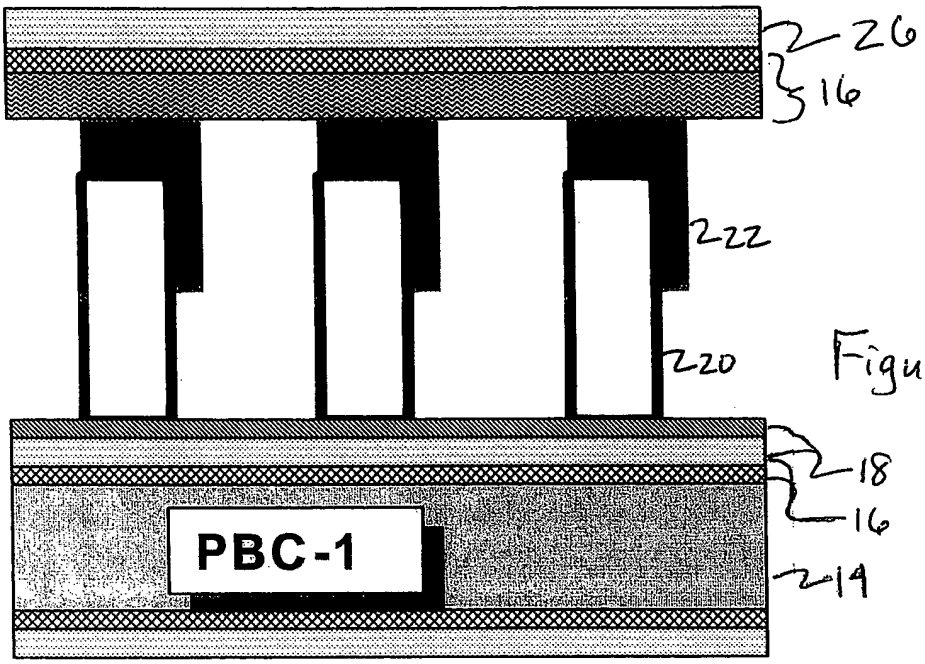

Figure 9A

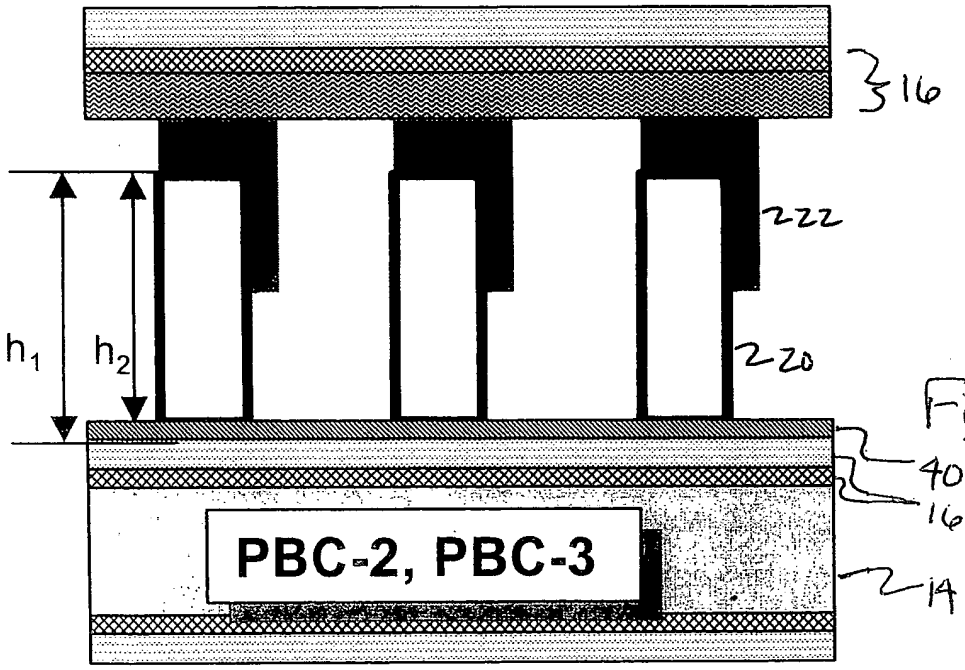

Figure 9B

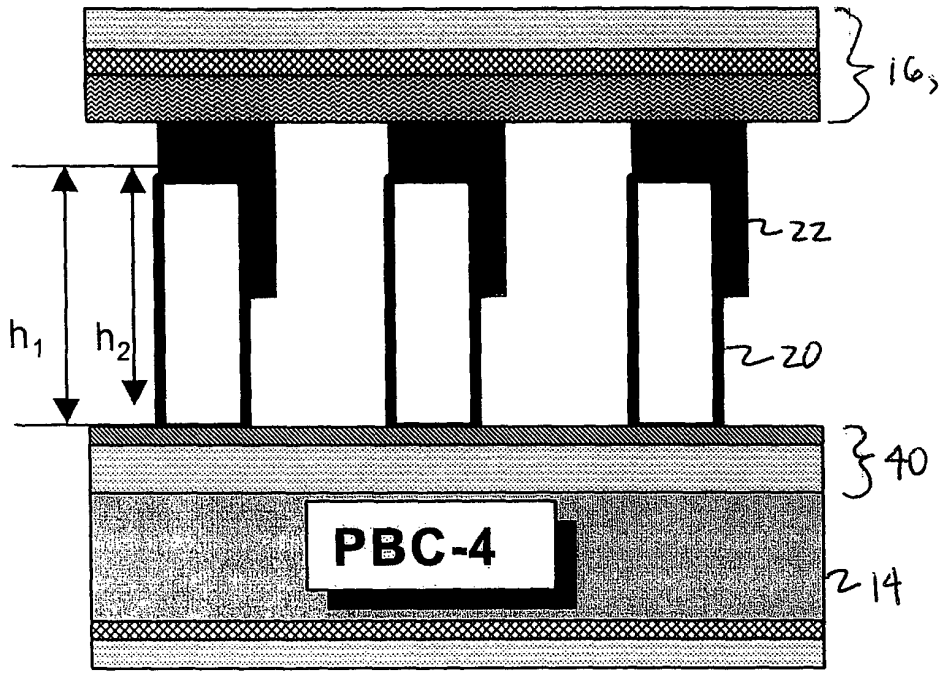

Figure 9C

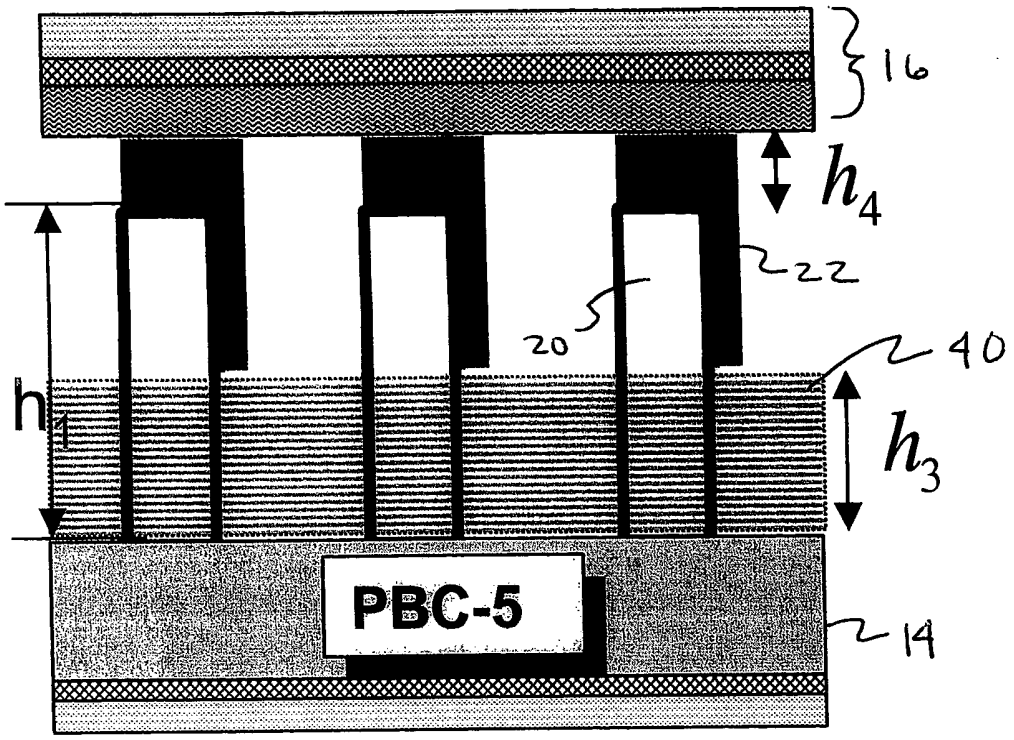

Figure 9D

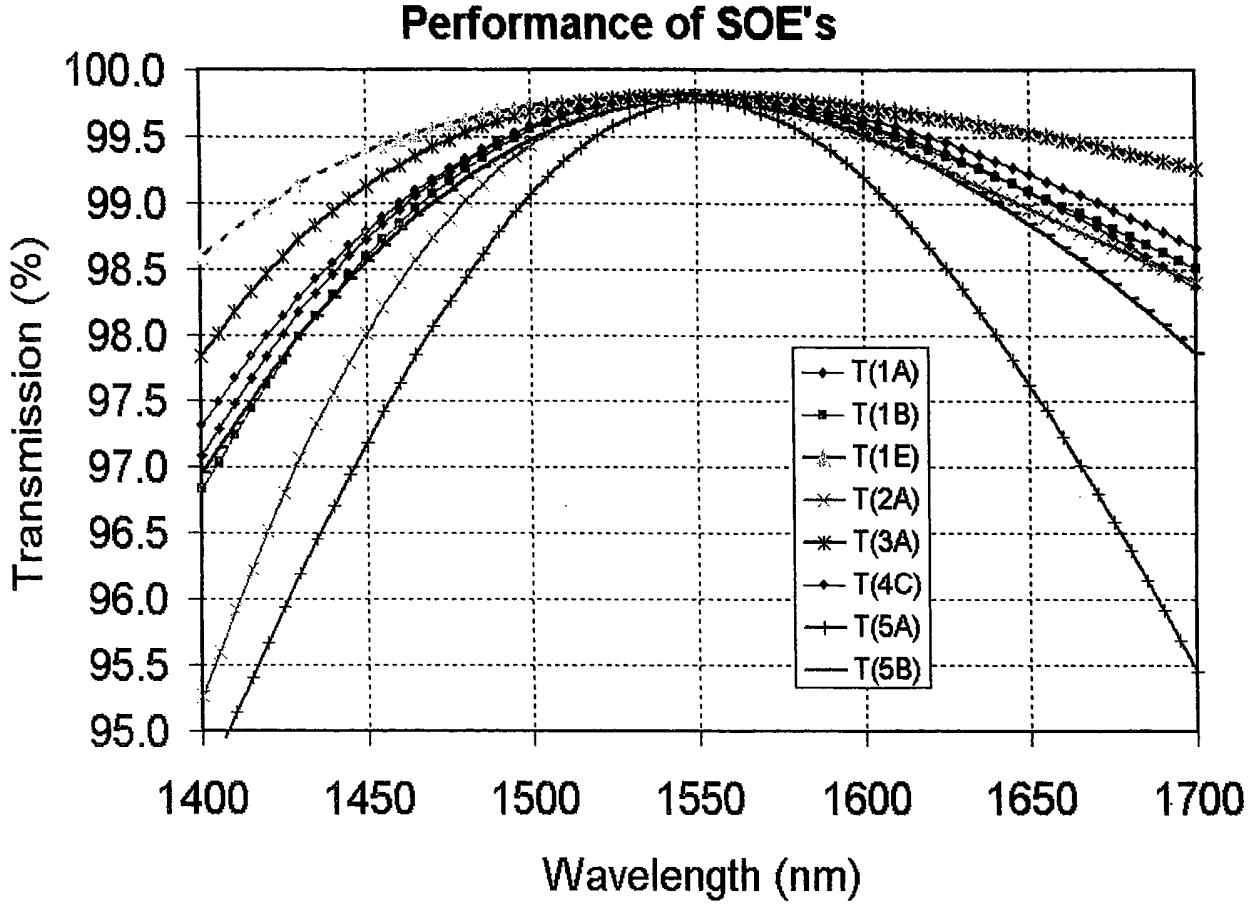
Performance of SOE's
Transmission (%)
100.0
99.5
99.0
98.5
98.0
97.5
97.0
96.5
96.0
95.5
95.0
1400
1450
1500
1550
1600
1650
1700
Wavelength (nm)
T(1A)
T(1B)
T(1E)
T(2A)
T(3A)
T(4C)
T(5A)
T(5B)

Figure 10